



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,806	11/17/2003	Melissa A Petruska	S-100,641	5182
35068	7590	12/19/2005	EXAMINER	
UNIVERSITY OF CALIFORNIA LOS ALAMOS NATIONAL LABORATORY P.O. BOX 1663, MS A187 LOS ALAMOS, NM 87545			KUGEL, TIMOTHY J	
			ART UNIT	PAPER NUMBER
			1712	

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/715,806

Applicant(s)

PETRUSKA ET AL.

Examiner

Timothy J. Kugel

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 9-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 19-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-26 are pending as amended on 30 November 2005. Claims 9-18 have been withdrawn from consideration.

Election/Restrictions

2. Applicant's election without traverse of the invention of group I, claims 1-8 and 19-26, in the reply filed on 30 November 2005 is acknowledged.

3. Claims 9-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 30 November 2005.

Specification

4. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

Claim Objections

5. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim that depends from a dependent claim should not be separated by any claim that does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim Interpretation

6. Claims 1-8 and 23-26 use the transitional term 'including', which has been construed as being synonymous with 'comprising', which is inclusive or open-ended and does not exclude additional, unrecited elements or method steps.

Allowable Subject Matter

7. Regarding claims 19-22, since no prior art was found that anticipates or renders obvious the elected species of alkoxysilane-terminal groups, the search of the Markush-type claim was extended.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

Art Unit: 1712

F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1, 2, 5-8 and 19-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4, 5, 11, 12, 17, 18, 21, 22 and 25 of copending Application No. 10/715,733.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims 1, 2, 4, 5, 11 and 12 of copending application claim a process of preparing a solid composite including up to 30% loading of colloidal nanocrystals dispersed in a sol-gel host matrix comprising admixing colloidal nanocrystals—of the form M_1X_1 or $M_1M_2X_1$ or $M_1M_2M_3X_1$ or $M_1X_1X_2$ or $M_1M_2X_1X_2$ or $M_1M_2M_3X_1X_2$ or $M_1X_1X_2X_3$ or $M_1M_2X_1X_2X_3$ or $M_1M_2M_3X_1X_2X_3$ wherein M_1 , M_2 and M_3 each are zinc, cadmium, mercury, aluminum, gallium, indium, thallium, lead, tin, magnesium, calcium, strontium, barium mixtures or alloys and X_1 , X_2 and X_3 each are sulfur, selenium, tellurium, arsenic, antimony, nitrogen, phosphorus, silicon, germanium, silver, gold, cobalt, iron, nickel, copper or manganese—within a solvent—including per the specification of the copending application (Page 10 Lines 7-25) ethanol, 1-propanol and 1-butanol combined with tetrahydrofuran or hexane (See *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970)—to form an alcohol-soluble colloidal nanocrystal-polymer complex, admixing the alcohol-soluble colloidal nanocrystal-polymer complex with a sol-

Art Unit: 1712

gel precursor material—including an alkoxide, halide or hydroxide of silicon, titanium, zirconium, aluminum, vanadium, iron, tin, tantalum, cerium or chromium—wherein the sol-gel host is transparent and forming said solid composite from said admixture such that the nanocrystals are uniformly dispersed within the sol-gel host but with the addition of an amphiphilic polymer unclaimed in the instant application; and claims 17, 18, 21, 22 and 25 of the copending application claim a solid composite comprising the reaction product of colloidal nanocrystals—of the structure M_1X_1 or $M_1M_2X_1$ or $M_1M_2M_3X_1$ or $M_1X_1X_2$ or $M_1M_2X_1X_2$ or $M_1M_2M_3X_1X_2$ or $M_1X_1X_2X_3$ or $M_1M_2X_1X_2X_3$ or $M_1M_2M_3X_1X_2X_3$ wherein M_1 , M_2 and M_3 each are zinc, cadmium, mercury, aluminum, gallium, indium, thallium, lead, tin, magnesium, calcium, strontium, barium, mixtures or alloys and X_1 , X_2 and X_3 each are sulfur, sulphur, selenium, tellurium, arsenic, antimony, nitrogen, phosphorus, silicon, germanium, silver, gold, cobalt, iron, nickel, copper or manganese—complexed with an amphiphilic polymer including hydrophobic and hydrophilic groups and a sol-gel precursor material—including an alkoxide, halide or hydroxide of silicon, titanium, zirconium, aluminum, vanadium, iron, tin, tantalum, cerium or chromium—wherein the nanocrystals have a volume loading of up to about 30% within the solid composite.

Since the claims of the instant application use the inclusive or open-ended transitional terms 'including' or 'comprising', even though the claims of the copending application claim the additional amphiphilic polymer unclaimed in the instant application, they still "anticipate" the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102 and/or 35 USC § 103

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-6 and 19-26 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Application Publication 2002/011080 (Barney hereinafter).

Barney teaches colloidal nanocrystals, a solid composite including nanocrystals and a process of making a solid composite including nanocrystals comprising mixing nanocrystals—including ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, AlN, AlP, AlAs, AlSb, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, TiN, TiP, TiAs, TiSb, PbS, PbSe and PbTe nanocrystals (§§0011 and 0022)—with a lower alcohol—ethyl alcohol, butyl alcohol and isopropyl alcohol (§0032)—a non-polar solvent—including 1,1,1-trichloroethane, dichloromethane and cyclohexane (§0032)—and a sol-gel precursor—such as silicon alkoxide, titanium alkoxide or zirconium alkoxide (§0031)—at ratios of 5:1 to 10:1 of the nanocrystal solution to the binder (§0042) and forming a solid matrix containing the nanocrystals (§0031).

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

Art Unit: 1712

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 7 and 8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Barney.

Barney teaches colloidal nanocrystals, a solid composite including nanocrystals and a process of making a solid composite including nanocrystals comprising mixing nanocrystals—including ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, AlN, AlP, AlAs, AlSb, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, TiN, TiP, TiAs, TiSb, PbS, PbSe and PbTe nanocrystals—with a lower alcohol—ethyl alcohol, butyl alcohol and isopropyl alcohol—a non-polar solvent—including 1,1,1-trichloroethane, dichloromethane and cyclohexane—and a sol-gel precursor—such as silicon alkoxide, titanium alkoxide or zirconium alkoxide—at ratios of 5:1 to 10:1 of the nanocrystal solution to the binder and forming a solid matrix containing the nanocrystals as detailed above.

Since Barney teaches the same composition as claimed, one of ordinary skill in the art at the time the invention was made would have expected that the transparency of the sol-gel host and the uniformity of the dispersion of nanocrystals of the Barney composition would inherently be the same as claimed.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103. "There is nothing inconsistent in concurrent

Art Unit: 1712

rejections for obviousness under 35 U.S.C. 103 and for anticipation under 35 U.S.C.

102." *In re Best*, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 20020155507

10-2002

Bruchez et al.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Kugel whose telephone number is (571) 272-1460. The examiner can normally be reached Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

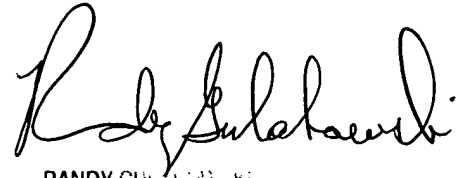
Application/Control Number: 10/715,806

Page 9

Art Unit: 1712

TJK

Art Unit 1712

A handwritten signature in black ink, appearing to read "Randy Gulabekian". The signature is fluid and cursive, with a large initial "R" and a long, sweeping underline.

RANDY GULABEKIAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700